

GAO

Report to the Chairman, Subcommittee  
on Government Management,  
Information, and Technology, Committee  
on Government Reform and Oversight  
House of Representatives

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June 1996

# OPERATIONAL SUPPORT AIRLIFT

## Analysis of Joint Staff Estimate of Military Wartime Requirements





**National Security and  
International Affairs Division**

B-271915

June 21, 1996

The Honorable Stephen Horn  
Chairman, Subcommittee on Government Management,  
Information, and Technology  
Committee on Government Reform and Oversight  
House of Representatives

Dear Mr. Chairman:

In December 1995, we testified<sup>1</sup> that the Joint Chiefs of Staff had studied<sup>2</sup> wartime requirements for Operational Support Airlift (OSA) across the Department of Defense (DOD). OSA aircraft are used to meet short notice, generally smaller cargo and passenger requirements that cannot be met by regularly scheduled tactical resupply aircraft. The Joint Staff's study found that the joint wartime requirement for OSA is 391 aircraft, or about 100 less than the fleet that existed at the time of the study. You asked us to determine if the 391 aircraft level was excessive. As a result, we (1) recalculated the Joint Staff's estimate using the same computerized model and (2) determined how changes in the flight frequency assumptions affected the calculation of the aircraft requirements.

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**Background**

In May 1995, the Commission on Roles and Missions reviewed DOD's post-Cold War direction and the plans to proceed in that direction. Among other things, its report concluded that there were too many OSA aircraft and recommended changes to eliminate the excess capacity. In response, the Deputy Secretary of Defense asked the Chairman of the Joint Chiefs of Staff to determine wartime requirements and to recommend management changes to improve efficiency. The Joint Staff subsequently formed an OSA working group to study the matter.

The group developed an activity-based model to determine OSA requirements for a conventional war involving two major regional contingencies. The model, applicable to any theater, was based on notional requirements of the various commanders in chief for OSA-type aircraft. The methodology divided each theater or geographic area into a number of support regions. Within each support region, airfield nodes (single airfields or a group of neighboring airfields) were identified. OSA capability was established to connect each airfield node within a support

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<sup>1</sup>Travel of Government Officials on Government Aircraft (GAO/T-NSIAD-96-85, Dec. 29, 1995).

<sup>2</sup>Wartime Requirements for Operational Support Airlift, the Joint Staff (Oct. 1995).

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region and to connect each support region to every other support region in the area.

Airfield nodes in each overseas support region were to be connected to all other nodes within that region by nonstop flights three times a day. Likewise, each support region in an overseas area was to be connected to every support region in that area by nonstop flights three times a day. Because of the ready availability of commercial flights, nodes within the continental United States were connected an average of 1.5 times a day and support regions were connected to every other region once a day.

After activity-based requirements were determined, mission-specific aircraft requirements were identified. Mission-specific requirements include key commander mobility, required user transportation, remote link (Caribbean, Iceland, Azores, Africa, South East Asia, etc.) requirements, surge, and other requirements identified by the commander in chief. Total aircraft requirements were then determined by applying service planning factors (10 percent for short-range aircraft and 15 percent for long-range aircraft) to allow for attrition reserve, maintenance withholds, and proficiency training. A mission capability rate of 85 percent for long-range aircraft and 80 percent for short-range aircraft was validated by the services and built into the Joint Staff's model.

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## Results in Brief

Our calculation of the activity-based demand differed slightly from the Joint Staff's estimate. Using the assumptions set forth in the Joint Staff study, we found that the Joint Staff estimate was overstated by 6 aircraft—391 versus our estimate of 385 aircraft.

Subsequent to our initial analysis, we were informed by DOD officials that they had used a different capability assumption in computing the Pacific Command's (PACOM) requirement for long-range aircraft. Instead of using the assumption that these aircraft can average two round trips per day between regions, as shown in the Joint Staff study and as reflected in related briefing charts, their requirement was based on the assumption that long-range aircraft can average only 1.5 flights per day in PACOM. If we substitute this assumption in our analysis, we get the same overall aircraft requirement that was reported in the Joint Staff study. However, our figures still differ slightly in the appropriate mix of aircraft.

To test how changing the assumption on the number of flights needed each day between and within overseas regions would affect the Joint

Staff’s estimate, we calculated the requirement based on the need for two rather than three flights a day. Our calculation resulted in a requirement for 55 fewer aircraft than reported in the Joint Staff’s study. We recalculated the requirement merely to demonstrate the impact that changing the assumption would have on aircraft requirements; we are not questioning the flight frequency requirement established by the commanders in chief.

## Minor Differences Between Joint Staff Study and Our Analysis

Our recalculation of the activity-based demand differed slightly from the demand determined by the Joint Staff. We determined that five fewer aircraft would be required. Additionally, our analysis of the service planning factor yielded a difference of one long-range aircraft. Overall, our analysis showed a requirement for 6 fewer aircraft than the Joint Staff’s study, 385 versus 391 aircraft. Table 1 compares the requirement determination of the Joint Staff with our analysis.

**Table 1: Our Recalculation of the Joint Staff’s Requirement Computation**

	Joint Staff report			Our analysis		
	Long-range	Short-range	Total	Long-range	Short-range	Total
Mission-specific requirements	74	50	<b>124</b>	74	50	<b>124</b>
Activity-based requirements	62	157	<b>219</b>	59	155	<b>214</b>
Service planning allowances	21	21	<b>42</b>	20	21	<b>41</b>
Fleet adjustments	4	2	<b>6</b>	4	2	<b>6</b>
<b>Total aircraft requirement</b>	<b>161</b>	<b>230</b>	<b>391</b>	<b>157</b>	<b>228</b>	<b>385</b>

Except for two minor differences, our recalculation of the Joint Staff’s activity-based model matched the Joint Staff’s requirement computation for each theater. These two differences affect (1) the within-region in the Northwest continental United States and (2) PACOM’s between-region requirements. Each involves a mix of long- and short-range aircraft. Table 2 shows the differences.

**Table 2: Differences in Activity-Based Requirement Calculation**

	Joint Staff report			Our analysis		
	Long-range	Short-range	Total	Long-range	Short-range	Total
Northwest within-region	5	11	<b>16</b>	4	12	<b>16</b>
PACOM between-region	19	5	<b>24</b>	17	2	<b>19</b>
<b>Total aircraft requirement</b>	<b>24</b>	<b>16</b>	<b>40</b>	<b>21</b>	<b>14</b>	<b>35</b>

When we presented our findings to DOD officials, they reviewed the Joint Staff study for technical accuracy. Their review identified an error in the Joint Staff study. The study indicated that one of the model’s assumptions was that long-range aircraft can average two round trips per day between regions. DOD officials now say that their analysis was based on the assumption that long-range aircraft in PACOM can average only 1.5 round trips per day between regions. The lower rate for PACOM is due to the theater commander’s assessment that two trips per day exceeded acceptable risk parameters.

Substituting this assumption for the one described in the Joint Staff study, we recalculated PACOM requirements. We found that the total number of aircraft needed was 24 as reflected in the Joint Staff study. However, our analysis did differ slightly on the appropriate mix of aircraft. The Joint Staff study shows a need for 19 long-range aircraft and 5 short-range aircraft, whereas our recalculation identified this need as 22 long-range and 2 short-range aircraft. In other words, changing the assumption resulted in our analysis agreeing with the 391 requirement established by the Joint Staff study.

We do want to note that the geographic distances between regions in the PACOM theater are comparable to those in other overseas areas that use the standard assumption of two round trips a day. Since we are not aware of any other factors that would produce significantly different flight durations in the PACOM theater, we question why the PACOM theater commander believes the long-range aircraft capability in PACOM is different than in other overseas theaters.

## Sensitivity to Change in Flight Frequency

The Joint Staff’s activity-based model was based on the commanders in chief’s assumption that each region in an overseas theater and each node within a region have to be linked via direct, nonstop flights three times a

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day. Although we are obliged to accept this assumption, we conducted a sensitivity analysis using the assumption that two rather than three daily flights between and within overseas regions would suffice. We found that the OSA requirement would be reduced by 55 aircraft—33 short-range and 22 long-range aircraft.<sup>3</sup>

We are not implying that the commanders in chief's flight frequency estimate is in any way flawed. Our intent is only to show how a change in flight frequency could potentially affect the number of OSA aircraft required to meet wartime requirements.

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## Agency Comments

In commenting on a draft of this report, DOD officials generally concurred with our report as written. They did, however, reiterate their position concerning the assumption employed in their calculation of PACOM requirements for long-range aircraft.

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## Scope and Methodology

To validate DOD's wartime requirement for OSA aircraft, we examined the following documents from the Joint Staff: a report on wartime requirements for operational support airlift (Oct. 1995), briefing charts on the OSA wartime force size methodology, and computer spreadsheets documenting the OSA study methodology.

Our examination included a review of the above referenced documents and a recalculation of the Joint Staff's spreadsheet model and analytical procedures. We verified the mathematical accuracy of the force-level estimates in the Joint Staff's formal report. We fully accepted the Joint Staff's judgments about the military scenario and OSA mission requirements without additional review. We also accepted the report's assumptions on mission-specific requirements as well as the operations and maintenance of OSA aircraft.

We conducted our review from January 1996 to April 1996 in accordance with generally accepted government auditing standards.

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<sup>3</sup>We did not recalculate OSA requirements within the continental United States because the ready availability of commercial flights had already been factored into the Joint Staff model.

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We are sending copies of this report to the Secretary of Defense. Copies will be made available to others upon request.

Sincerely yours,

A handwritten signature in black ink that reads "Mark E. Gebicke". The signature is written in a cursive style with a large, looping initial "M".

Mark E. Gebicke  
Director, Military Operations and  
Capabilities Issues



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